CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-5 (Canceled)

6. (Currently Amended) A system for data representation, comprising:

a drug delivery system;

a data stream device; and

a drug display monitor in communication with the data stream device, ~~wherein the drug~~
display monitor includes an algorithm configured to mathematically determine a present and
future probability of effectiveness of at least one drug introduced into the subject by the drug
delivery system, wherein the present and future probabilities of effectiveness include a
correlation of a predicted drug effect site concentration based on modeled pharmacokinetic data
and a probability of achieving a bodily effect on the patient based on modeled pharmacodynamic
data, and wherein the drug display monitor is configured to depict, in real time, ~~a~~ the present and
future ~~probability~~ probabilities of effectiveness including predicted pharmacokinetic effect site
concentrations depicted as a percent of a concentration value corresponding to a known
pharmacodynamic probability of causing a particular bodily effect ~~at least one drug introduced~~
~~into the subject by the drug delivery system and future probabilities of effectiveness of the one or~~
~~more drugs in the subject, wherein the present probability of effectiveness includes a correlation~~

Note: The underlined text above represents additions; struck-through text represents deletions in this currently amended claim.

~~of a predicted drug concentration based on modeled pharmacokinetic data and a probability of~~

~~pharmacodynamic effectiveness based on modeled pharmacodynamic data.~~

7. (Previously presented) The system of claim 6, wherein the drug delivery system comprises at least one of:

      an infusion pump;

      a gas administration machine; and

      one or more bolus injection apparatus.

8. (Previously presented) The system of claim 6, wherein the drug delivery system further comprises a simulator, which simulates the present and future concentrations based on a model.

9. (Previously presented) The system of claim 8, wherein the simulator simulates bolus drugs.

10. (Previously presented) The system of claim 8, wherein the simulator simulates infusion drugs.

11. (Previously presented) The system of claim 8, wherein the simulator simulates anesthetic drugs.

12. (Previously presented) The system of claim 6, wherein the drug display monitor, further comprises:

(1) a data decoder receiving data from the data stream device;

(2) a dosage calculator receiving decoded data from the data decoder;

(3) a drug modeler and normalizer receiving calculated data from the data decoder;

(4) a storage device, receiving drug and dosage data from the drug modeler and normalizer; and

(5) a display generator.

13. (Previously presented) The system of claim 12, wherein the display generator produces a display of drug dosage, drug name, past, present and predicted drug site concentration.

14. (Currently amended) A system for data representation, comprising:

a processor, comprising drug models, producing an internal representation of drug display data and decoding a data stream, wherein the processor includes an algorithm configured to mathematically determine a present and future probability of effectiveness of at least one drug introduced into the subject by the drug delivery system, wherein the present and future probabilities of effectiveness include a correlation of a predicted drug effect site concentration based on modeled pharmacokinetic data and a probability of achieving a bodily effect on the patient based on modeled pharmacodynamic data;

a memory unit in communication with the processor;

a long term memory unit in communication with the processor;

a graphics adapter in communication with the processor; and

a display monitor in communication with the graphics adapter and configured to depict, graphically and substantially in real-time, ~~a~~ the modeled probability of effectiveness <u>including predicted pharmacokinetic effect site concentrations depicted as a percent of a concentration value corresponding to a probability of causing a particular bodily effect including at least one of:</u> ~~of at least one drug in a subject at:~~

      causing the subject to lose consciousness;

      eliminating or blocking laryngoscopy pain, incision pain, or intraoperative pain; ~~or~~ <u>and</u>

      causing a measurable level of muscle relaxation~~.;~~

~~wherein the probability of effectiveness includes a correlation of a predicted drug concentration based on modeled pharmacokinetic data and a probability of pharmacodynamics effectiveness based on modeled pharmacodynamic data.~~

15. (Previously presented) The system of claim 6, wherein the drug display monitor is also configured to depict past probabilities of effectiveness of the at least one drug in the subject.

16. (Previously presented) The system of claim 6, wherein the drug display monitor depicts each probability of effectiveness as a percent likelihood that the at least one drug has a desired effect.

17. (Previously presented) The system of claim 16, wherein the percent likelihood is based on results from a predefined population.

18. (Previously presented) The system of claim 6, wherein the drug display monitor

depicts a line representing a concentration at which there is a ninety-five percent probability the

at least one drug will have a desired effect.

19. (Previously presented) The system of claim 18, wherein the line representing the

concentration at which the at least one drug will have a desired effect provides a point of

reference for a clinician to compare the present or future concentration of the at least one drug.

20. (Previously presented) The system of claim 6, wherein the drug display monitor is

configured to depict, in real time present and future probabilities of effectiveness of a

combination including at least two components selected from the group consisting of at least one

sedative, at least one analgesic, and at least one neuromuscular blocker.

21. (Previously presented) The system of claim 20, wherein the drug display monitor is

configured to depict, in real time, present and future probabilities of effectiveness of a total

course of anesthesia administered to the subject in causing the subject to lose

consciousness,.eliminating or blocking laryngoscopy pain, incision pain, or intraoperative pain,

and causing a measurable level of muscle relaxation.

22. (Previously presented) The system of claim 14, wherein the processor is configured

to model the probability of effectiveness of the at least one drug in the subject based on a

plurality of inputs.

23. (Previously presented) The system of claim 22, wherein the plurality of inputs includes a manner in which the at least one drug is administered and an administered dose of the at least one drug.

24. (Previously presented) The system of claim 22, wherein the plurality of inputs includes at least one of a height, weight, gender, and age of the subject.

25. (Previously presented) The system of claim 14, wherein the processor, based on a drug model of the drug models, is configured to cause the graphics adapter and the display monitor to graphically depict a modeled present probability of effectiveness of at least one drug in the subject and a predicted future probability of effectiveness of the at least one drug in the subject.

26. (Previously presented) The system of claim 25, wherein the processor, based on the drug model, is configured to cause the graphics adapter and the display monitor to graphically depict a modeled past probability of effectiveness of at least one drug in the subject.

27. (Previously presented) The system of claim 25, wherein the processor, based on the drug model, is configured to cause the graphics adapter and the display monitor to graphically depict a percent likelihood that the at least one drug has a desired effect.

28. (Previously presented) The system of claim 27, wherein the processor, based on the drug model, is configured to cause the graphics adapter and the display monitor to graphically

depict the percent likelihood based on results from a predefined population.

29. (Previously presented) The system of claim 25, wherein at least the modeled present probability of effectiveness and the predicted future probability of effectiveness of the at least one drug are illustrated in reference to an element representing an effective dose of the at least one drug at which the at least one drug would have a desired effect on at least ninety-five percent of a population.

30. (Previously presented) The system of claim 14, wherein the processor is configured to display an element representing an effective dose of at least one drug at which the at least one drug would have a desired effect on at least ninety-five percent of a population.

31. (Previously presented) The system of claim 14, wherein the processor is configured to model at least present and future probabilities of effectiveness of at least two anesthetic agents selected from the group consisting of at least one sedative, at least one analgesic, and at least one neuromuscular blocker, the probabilities of effectiveness respectively including at least two of a probability of causing the subject to lose consciousness, a probability of eliminating or blocking laryngoscopy pain, incision pain, or intraoperative pain, and a probability of causing a measurable level of muscle relaxation in the subject.

32. (Previously presented) The system of claim 31, wherein the processor is configured to cause at least one of the graphics adapter and the display monitor to depict at least the present and future probabilities of effectiveness of the at least two anesthetic agents.

33. (Previously presented) The system of claim 31, wherein the processor is configured to model at least present and future probabilities of effectiveness of a total course of anesthesia administered to the subject.

34. (Previously presented) The system of claim 33, wherein the processor is configured to cause at least one of the graphics adapter and the display monitor to depict at least the present and future probabilities of effectiveness of each component of the total course of anesthesia administered to the subject.

35. (Currently amended) A system for modeling and displaying a probability of desired effectiveness of at least one drug in a subject, comprising:

a processing element programmed to model a concentration of at least one drug in a subject over time, wherein the processing element includes an algorithm configured to mathematically determine a modeled concentration of the at least one drug normalized in reference to at least one concentration at which the at least one drug will have a desired pharmacodynamic effect on a known percentage of a population including a correlation of the modeled concentration and a set of modeled pharmacodynamic data for the corresponding at least one drug; and

an output element configured to display, substantially in real-time, ~~a~~ the modeled concentration of the at least one drug normalized in reference to at least one concentration at which the at least one drug will have a desired pharmacodynamic effect on a known percentage

of a page ~~based on a correlation of the modeled concentration and a set of modeled pharmacodynamic data for the corresponding at least one drug~~.

36. (Previously presented) The system of claim 35, wherein the output element is configured to display the modeled concentration of the at least one drug graphically.

37. (Previously presented) The system of claim 35, wherein the processing element is configured to model at least present and future concentrations of at least two anesthetic agents selected from the group consisting of at least one sedative, at least one analgesic, and at least one neuromuscular blocker and the desired effect respectively includes at least two of causing the subject to lose consciousness, eliminating or blocking laryngoscopy pain, incision pain, or intraoperative pain, and causing a measurable level of muscle relaxation.

38. (Previously presented) The system of claim 37, wherein the processing element is configured to cause the output element to depict at least the present and future concentrations of the at least two anesthetic agents.

39. (Previously presented) The system of claim 37, wherein the processing element is configured to model at least present and future concentrations of a total course of anesthesia administered to the subject.

40. (Previously presented) The system of claim 39, wherein the processor is configured to cause the output element to depict at least the present and future concentrations of each component of the total course of anesthesia administered to the subject.

41. (Previously presented) The system of claim 6, wherein the drug display monitor is configured to depict an effect site concentration of the one or more drugs.

42. (Previously presented) The system of claim 6. wherein each of the present probability of effectiveness and the future probabilities of effectiveness comprise an effect site concentration.

43. (Previously presented) The system of claim 6, wherein the drug display monitor is configured to depict a three-dimensional representation of at least one probability of effectiveness of the one or more drugs.

44. (Previously presented) The system of claim 14, wherein the processor is configured to model an effect site concentration of the at least one drug.

45. (Previously presented) The system of claim 14, wherein each of the present probability of effectiveness and the future probabilities of effectiveness comprise an effect site concentration plot normalized in reference to a concentration at which the at least one drug will have a desired pharmacodynamic effect on a known percentage of a population.

46. (Previously presented) The system of claim 14. wherein the processor is configured to cause at least one of the graphics adapter and the display monitor to depict a probability of effectiveness of the at least one drug three-dimensionally.

47. (Previously presented) The system of claim 35, wherein the processing element is configured to model an effect site concentration of the at least one drug.

48. (Previously presented) The system of claim 35, wherein the modeled concentration comprises an effect site concentration.

49. (Previously presented) The system of claim 35, wherein the processing element is configured to cause the output element to depict a concentration and effect of the at least one drug three-dimensionally.

50. (Original) The system of claim 6, wherein the display of the current and future probability of effectiveness includes a predicted concentration normalized to a concentration at which the at least one drug will have a desired pharmacodynamic effect on a known percentage of a population.